sive, and gradually descending to a minimum (when the spots are rare or absent), proceeds again, in regulated rhythm, to another maximum of prevalence. The interval between maximum and maximum of spots, or between minimum and minimum, was at first determined provisionally by Schwabe at about 10 years, and this result formed the foundation of solar physics. Wolf, from a more extended examination, placed the period at ll'lll years, with a probable error of *307 of a year; and the most recent investigator (J. A. Broun) assigns the term of 1045 years. The periodicity or regularity of occurrence of extensive maculation[1] (as the condition indicated by the presence of spots is termed), alternating with periods of freedom of the photosphere, has been finally established; and for practical deduction it does not appear to me to be minutely important that the periodic time should be expressed with decimal accuracy, for in the investigation of past records of the frequency or sparseness of spots, difficulty must constantly be found in fixing the punctual date of the different maxima and minima. The certainty remains that a settled law or uniformity has been discovered with a range of period of between 10 and 11 years. And although writers fix their attention naturally upon the spots themselves, the reader should bear in mind that the real causes of abnormal changes in terrestrial phenomena reside in periodic paroxysmal disturbances in the constitution of the sun itself, of which the spots form one conspicuous and invariable sign. In weighing the value of the concluding inference hereafter submitted, the reader will remember that upon the transmission of heat and light from the sun depend the faintest, equally with the most massive, movements of our air, with their effect upon every form of life ; and that every drop of rain or crystal of snow, in water, mist, and cloud, owe their origin to the same cause. It will aid us also to remember that where a causal relationship has been established between two events, an increased or deficient energy in the cause at any time will be reflected in corresponding

variations of the effect. The first remark that is suggested is—aud this is coincident with fact—that since we derive the heat and light imperative for terrestrial and human existence and activity from the [1] Latin *macula,* a spot.